

ASRTUSPECIFICATIONFORTYRECURINGBLADDER
(forpre-curedretreadingprocess)

0.0 SPECIFICATIONNO. :AS:293:80:MAY:2013

1.0 SCOPE:

This standard prescribes requirements and methods of testing for Tyre Curing Bladder.

This is a purchase specification and does not include manufacturing details. The parts/material supplied against this specification shall be compatible with the original equipment.

The supplier shall provide detail drawings and specifications to the purchasing/ inspecting authority whenever such information is specifically called for.

The material offered against this specification shall conform to this specification in full. The tests shall be carried out on the part directly or on the specimen prepared from the components'. If any of the samples fail in any one or more tests specified in Table 1, the sample shall be considered as not having met the requirements of this specification.

It is the manufacturer's prime responsibility to satisfy the inspection authority that the commodity conforms to this standard. This may be accomplished by performing the tests specified in this standard.

Sample selection shall be the responsibility of the Quality Assurance Officer. Required quantity for complete testing as per this specification shall be supplied.

This specification supersedes earlier specification No. AS:293:61:OCT:2000

2.0 APPLICATION AND REFERENCE:

This specification covers the requirements of Tyre Curing Bladder used for Pre-cured Retreading Process of Pneumatic Tyres having nominal size of 9.00 x 20

,10.00x20,7.50x16,8.25x16usedon automobiles.

ThefollowingIndianStandardsarenecessaryadjunctstothisstandard.

SpecificationNo.	Year	Title
IS:3400(Part1)	1987	Methods of test for vulcanised rubber. Tensile stress/strain properties (Second revision)
IS:3400(Part2)	1980	Hardness(Firstrevision)Reaffirmed1991
IS:3400(Part4)	1987	Acceleratedageing(Secondrevision)
IS:3400(Part22)	1984	Methodoftestsforvulcanizedrubber Chemical Analysis.Reaffirmed 1990
IS:9081	1992	Automotive Vehicles – Valves & Valve Accessories for Pneumatic Tyres – Specification.
IS:10939	1984	DesignationofValvesforPneumatic Tyres

3.0 TESTS&REQUIREMENTS:

TestQuantity:

Minimumonesampleshallbesuppliedfortesting.

Workmanship shall be of the qualitythat the Tyre CuringBladder is free from any defectwhichaffecttheappearanceorimpairitsserviceabilitysuchas separat ionof bondoradhesionaroundthevalvestem,airpockets,orvisiblelackofadhesio nin butt or lap splices, incorrect or damaged valves, and air bubbles, cracks or other faults in its outer surface when installed in the tyre, which in turn, is used for its intendedpurpose.Inflatedbladdershallnotshowanyairleakagewhentested as detailed below in 3.4.

TheTyreCuringBladdershallhaveuniformthicknessandbesymmetricalinshap e and designed to fit properlyin tyrehavingnominalsize of 9.00 x20 ,10.00x20, 7.50x16, 8.25x16.

The Tyre Curing Bladder with valve shall be inflated to just round out giving circumferentiallengthof300Cmsfor9.00x20,10.00x20&240cmsfor7.50x1 6, 8.25x16.approximatelyandtestedunderwaterforevidenceofanyleakageonthe

bladder surface, joints and through valve.

The Tyre Curing Bladder shall not show any leakage or defective workmanship which may impair airtightness. Failing to meet this requirement the bladder shall be considered for rejection.

Bulging:

When Tyre Curing Bladder is inflated to just round out i.e. 305 Cm for 9.00x20 / 10.00x20 and 245cm7.50x16/8.25x16 approx. circumference, the cross-sectional diameter shall be measured at four places at 90° intervals away from joints. The variation in cross sectional diameter shall not be more than 10%.

Minimum Permissible Thickness:

The thickness of the bladder at any point shall not be less than 3mm of the average gauge of the 16 readings taken on the test specimen. Measure the thickness of the specimen using dial thickness gauge. The thickness of each test specimen shall be gauged at each of four points, i.e. crown centre, base centre, right side wall centre and left side wall centre.

Outside Cross-Sectional Periphery:

Outside Cross-sectional Periphery (Girth) of the curing bladder may be 49 to 54 cms. When measured as detailed below:

To determine conformity to above, avoiding splice and vent areas, four specimens each 2.5 cm wide, shall be cut squarely across the bladder. The first shall be cut some distance away from the valve and the other three shall be cut at 90 degree interval therefrom. Each of the four 2.5cm wide rings shall be laid on flat surface in the original moulded shape of the bladder cross section and measured with a flat steel tape, around the outside of this section. The average of four measurements shall be taken as the outside cross sectional periphery OR

Each of the four specimen obtained shall be cut squarely across the width away from the centre of the base or centre of the crown. They shall be laid on a flat surface, with what was part of the outside OD of the inert tube uppermost. These four surfaces shall be measured for length and their average taken as the cross-sectional periphery.

Valve:

Tyre Curing Bladders shall be equipped with suitable valve conforming to IS:9081.

Material:

Tyre Curing Bladder in size shall be made from an appropriate rubber composition having excellent heat air ageing properties in air, steam water, hot flex properties and resistance to growth in service. The finished product shall be usable for 80 curings min.

The rubber hydrocarbon content shall not be less than 55% weight by weight.

Testing:

The methods of testing shall be those specified in Table 1 against each requirement.

- 4.0 MARKINGS:
EachCuringBladdershallbepermanentlymarkedwiththemanufacturer’snam
e, trade mark and size.
- 5.0 PACKING:
Materialshallbesuitablypackedtoavoiddamageduringtransit/handling.

TABLE1

Sr. No.	Characteristics	Requirements	Methodof Test IS:3400
1.	VisualExamination	Shall be permanently engravedasdetailedinC l. 4.1	-
2.	AirTightness	No air leakage shall be observedfromthetube or valve (Clause 3.4).	-
3.	Buldging	The variation in cross sectional diameter shall not be more than 10%.	-
4	Thickness,mm,Min.	3.0	-
5	AshContent, Max.	4.0	Pt22
6	RubberHydrocarbonContent, %,W/W,Min.	55.0	-
7	SpecificGravity	1.10to1.14	
8	Hardness,ShoreA(Max.)	60	Pt2
9	Pulloutstrengthofrubberbase for valve breaking load Kgf. Min.	175	IS:9081-1985 Cl.5.4
10	TensileStrength,Kgf/ Cm ² ,Min.	100	Pt1
11	Elongationatbreak,%,Min.	525	Pt1
12	StrengthofSplice,Kg/Cm ² , Min.	80	Pt1
13	Change in physical properties afteracceleratedageingat17 0 ±2 ⁰ Cfor24hours		Pt4
(a)	TensileStrength,%,Max.	-80	Pt1
(b)	Elongationatbreak,%,Max.	-50	Pt1
14	TensionSet,(50%elongation at170±3 ⁰ Cfor8hrs.),%Max.	80	Pt17 Cl.6.3

WEIGHTAGE MARKS FOR TYRE CURING BLADDER
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Sr. No.	Properties	Clause	Marks Allotted	P/T
1.	Visual Examination (Identification Markings)	3.2 and 4.1	3	T
2.	Air Tightness	3.4	2	T
3.	Bulging	3.5	5	P
4.	Thickness	3.6	2	T
5.	Hydrocarbon Content	3.9	9	P
6.	Ash Content	3.10(4)	3	P
7.	Specific Gravity	3.10(5)	2	P
8.	Hardness	3.10(6)	2	P
9.	Pull out strength of rubber base for valve	3.10(7)	2	P
10.	Tensile Strength	3.10(8)	15	P
11.	Elongation	3.10(9)	10	P
12.	Strength of splice	3.10(10)	10	P
13.	Accelerated ageing	3.10(11)		
a)	Change in Tensile Strength	3.10 (11a)	15	P
b)	Change in Elongation at Break	3.10 (11b)	15	P
14.	Tension Set (Permanent Set)	3.10(12)	5 ----- 100	P

P=Proportionate marks shall be considered

T = Total marks shall be considered